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Learning Organization Models and Their Application to the U.S. Army

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14. ABSTRACT

Army leaders recognize the utility of the Army becoming a learning organization to create agile, adaptive, and innovative leaders who can win in a complex world. However, there is no agreed upon definition or model of the learning organization and minimal empirical evidence to support existing models. This paper reviews four learning organization models: Senge's five disciplines, Garvin's building blocks of a learning organization, Marquardt's systems-linked learning organization, and Watkins and Marsick's action imperatives. While different, these models agree on several components including reduced bureaucracy and hierarchy, a shared vision, a climate of empowerment, experimentation, systems thinking, sharing learning with external sources, and measuring important outcomes related to learning. To become a learning organization, the Army will have to leverage current strengths and overcome certain hindrances including those related to training and doctrine, knowledge management, and the hierarchical culture. Research questions are identified whose answers will provide important information to aid the Army in becoming a learning organization.

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EXECUTIVE SUMMARY

Research Requirement

Becoming a learning organization is critical for the Army in its efforts to achieve the institutional agility necessary to counter an ever-changing enemy. However, clear guidance on how the Army will evolve into a learning organization is missing. The Army needs constant and consistent focus on aligning its systems, structures, doctrine, and culture so it can evolve as a learning organization.

Procedure

This paper reviewed four models of the learning organization: Peter Senge's five disciplines, David Garvin's building blocks of a learning organization, Michael Marquardt's systems-linked learning organization, and Karen Watkins' and Victoria Marsick's action imperatives. The overlapping components of these models were identified and the Army's status as a learning organization was discussed. This review of the academic literature highlights just a few of the research questions which the Army will need to answer in it's evolution as a learning organization.

Findings

Synthesis of the learning organization models details a learning organization as one that aligns its policies, systems, structure, and culture, through the regular practice of learning, and through using that learning to adapt. It is as a non-bureaucratic organization that has a shared vision in which learning is a key competitive advantage. Employees are empowered, learning and experimentation are rewarded, and problems are addressed in a systematic manner. The Army demonstrates some of these characteristics, but needs to work consistently and constantly towards becoming a learning organization.

Army doctrine encompasses some components of the learning organization, specifically in the concepts of Mission Command and Design. This indicates an understanding of the learning organization concept, but more consistent implementation of these concepts is needed. Additionally, while After Action Reviews (AARs) are an often-cited method of knowledge management, relevant knowledge is difficult to access and not all information that is recorded has been thoroughly analyzed. Lastly, a rigid, hierarchical structure is identified as an impediment to learning. The Army faces a challenge in finding a balance between a structure that requires rank and a culture that promotes idea generation from those closest to the problem.

Utilization and Dissemination of Findings

This review of the literature summarizes and analyzes research on learning organizations and supports the Army's understanding of learning organizations as it strives to become one. This review is intended to bring clarity to the concept of the learning organization and can be

used to assess the Army's progress towards become a learning organization, identify areas of opportunity, and determine how to accelerate the process of becoming a learning organization. Research questions presented in this paper, if answered, will allow the Army to translate the concept of the learning organization into Army context.

The information contained in this report supports the body of knowledge that can be used by the scientific community to address research questions. Additionally, Army leaders can use this analyses of the literature to review existing policies and practices that impact the evolution of the Army as a learning organization.

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LEARNING ORGANIZATION MODELS AND THEIR
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For decades, organizations have sought to become learning organizations. This is no small feat given the various definitions and models of learning organizations that have been created over the years. While several definitions of a learning organization exist (see Kingsbury, 1999 for a review of definitions), there are similarities among definitions. For one, a learning organization is defined as an organization that continually and proactively learns. While individuals in any organization may learn, in learning organizations, that learning is transferred throughout the organization and becomes part of the knowledge base of the organization as a whole. Additionally, learning organizations utilize their knowledge to adapt and transform in order to be successful as the organization faces new challenges and changes. Lastly, it is important to distinguish the learning organization from organizational learning. Organizational learning refers to the activities within an organization that facilitate learning and the sharing of learning throughout the organization. Learning organizations are a type of organization in which, through organizational learning, the capacity to create desired results is continually enhanced (Kingsbury, 1999; Senge, 1990). While organizational learning is an essential part of a learning organization, it is not sufficient for creating a learning organization. Learning organizations require individuals at all levels who share the same vision, think systematically, are empowered and enabled, and share knowledge throughout the organization and beyond the organization's borders.

Review of Learning Organization Theories

Just as there are myriad definitions of the learning organization, several theories of the learning organization exist. This review will cover, in detail, four major theories of the learning organization. The first theory, detailed by Peter Senge (1990) in his widely popular book *The Fifth Discipline* is often credited as bringing the concept of the learning organization mainstream. However, his model has been criticized as being too abstract and utopian (Garvin, 1993). In an attempt to address this and make the concept of the learning organization more concrete David Garvin (1993) proposed a model to answer some of the questions left unanswered by the Senge model. Next, Marquardt (1996) created a comprehensive model of the learning organization based on his work with organizations he identified as learning organizations. His model addressed the changing nature of organizations as the 21st century approached, including the increased importance of technology and globalization. Lastly, Marsick and Watkins (1999) sought to clearly differentiate individual from organizational learning and illuminate what organizations were doing to become learning organizations so that other organizations might follow suit.

The Fifth Discipline (Senge, 1990)

In his book, The Fifth Discipline, Peter Senge (1990) defines a learning organization as an organization in which "people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free and where people are continually learning how to learn together" (p. 3). He identifies five disciplines that organizations need to practice in order to become a learning organization: personal mastery, mental models, shared vision, team learning, and systems thinking.

Personal mastery involves organization members continually clarifying what is important to them, continuously refocusing energy toward that goal, and learning how to objectively view current reality. This requires being less reactive to problems and instead focusing resources on creating the desired future state. Individuals who practice personal mastery have a personal vision of a desired future which allows them to continually focus and refocus on this goal. Personal mastery also requires a commitment to being truthful about current state. A clear vision of the desired future state and an honest assessment of current state highlights the gap between the two. This gap is known as creative tension. There are two possible ways to relieve this tension: adjust the vision so it is closer to current reality, or work to change current reality so it is closer to the vision. Those who are uncomfortable with creative tension will tend to do the former, however, doing so means abandoning what we truly want. Those who are able to hold creative tension use it as the fuel which drives changes and moves current reality towards their vision. While Senge identifies personal mastery as being an important discipline to have at every level within an organization, he notes that individuals cannot be forced into personal mastery. Instead, leaders can create a climate where it is safe for employees to create personal visions, where there is a commitment to the truth, and where organization members are expected to challenge the status quo.

The second discipline of learning organizations is mental models. Mental models are deeply held beliefs, generalizations, and assumptions under which we operate. They shape how we act and impact what we see. Mental models are problematic when we are unaware of their existence and therefore unable to examine or change them. Organizations must help their members question their assumptions, understand internal contradictions in those assumptions, and think through new strategies based on new assumptions. To effectively work with mental models, Senge suggests that individuals must learn new skills and that organizations must create mechanisms that make the use of these new skills unavoidable. One new skill needed to effectively work with mental models is reflection. Individuals need to be able to reflect on their own thinking to become aware of how mental models are formed and how they impact action. This includes learning to differentiate between what we observe directly and what we infer from direct observation. The second new skill is that of inquiry; making our thinking explicit and open to public examination so that the flaws in our thinking and the assumptions underlying them can be identified and tested. The last skill involves recognizing the gap between espoused theories (what we say) and our theories-in-use (what we do).

Shared vision is the third discipline of Peter Senge's model. Having a shared vision in the organization clarifies for members what it is that they are working to create. This provides the focus and energy for learning and makes it more likely for organizational members to expose and change their mental models, recognize personal and organizational shortcomings, and commit to the long-term. In order to foster a shared vision, Senge suggests first encouraging members of the organization to create personal visions since shared visions arise from the interactions of personal visions. Shared vision also must be anchored in the mission and core values of an organization—what the organization seeks to accomplish (the vison) must align with how they plan to accomplish it (the mission), and why they want to accomplish it (core values). Maintaining energy over the long-term towards the shared vision can be challenging. Members of the organization may begin to become polarized if they see different visions of the future, people may become discouraged when faced with difficulties in achieving the vision, or become overwhelmed by the demands of the current situation. It is also important that an

organization's vision focuses on what the company aspires to achieve instead of what the company wishes to avoid. Negative shared visions focus energy on prevention instead of building something new.

The fourth discipline of a learning organization is team learning. Team learning is the process of aligning and developing the capacity of a team to create the results its members truly desire. Alignment occurs when the members of the team function as a whole with a shared vision and an understanding of how to complement one another's efforts. In order to do this, teams need to master productive dialogue. Dialogue is the free and creative exploration of ideas. When dialoguing, team members bring awareness to their assumptions and open those assumptions up to examination by the group. Members of the group are viewed as colleagues in a quest for clarity and insight. Additionally, the dialogue is facilitated by a person who keeps the conversation moving and helps the members maintain ownership of the process and its outcomes. Through effective dialogue, teams are able to tap into a larger pool of knowledge and meaning. Dialogue differs from typical discussions in that members are not trying to present and defend their points of view. Teams must balance dialogue and discussion effectively. Discussion is useful when the team must reach an agreement and make a decision.

The fifth discipline of Senge's learning organization model, the one which he named his book after, is systems thinking. Systems thinking is a discipline for seeing the structures and patterns that underlie complex problems and understanding how to change them effectively. It requires looking beyond linear cause and effect relationships and instead seeing the whole system—the cyclical interrelationships among variables in which each variable is both a cause and an effect. Systems thinking is necessary in situations of dynamic complexity; when cause and effect relationships are subtle and the long-term effects of interventions are not obvious. In such cases, typical planning and forecasting are ineffective and only address a part of the system.

Cause and effect relationships in systems are often separated in time and space. The effects of an action, such as an intervention to address a problem, may take weeks, months, even years to manifest. Because of this, people who are approaching the problem non-systemically may think the intervention is not working, and therefore apply more of the intervention. Pushing harder and harder on familiar solutions while the problem persists or even worsens is a good indicator of non-systemic thinking. Additionally, applying more and more of the solution may cause an organization to overshoot the goal of the intervention, and result in new problems. Thus, often times, the problems we are experiencing are related to a non-systemic solution implemented at a previous point in time. Instead of being solved, the problem has just shifted from one part of the system to another. Those who inherit the new problem are often not the ones who "solved" the first problem, so the true cause of the problem goes undetected.

Individuals are often unaware of their role in creating or contributing to the problems they're experiencing. They look for a cause of the problem—someone or something to blame—without realizing that they are part of the system causing the problem. Implementing non-systemic solutions may result in short-term relief of the problem, but also tends to produce long-term problems. These long-term problems result in an increased need for more and more of the solution, but also inhibit the system's ability to produce long-term solutions. Understanding and addressing issues requires seeing the systemic structure—the key interrelationships between variables that influence behavior over time. Instead of short-term reactiveness, organizations need to understand long-term trends and their implications.

Senge emphasizes that to be a learning organization all of the five disciplines need to be in place. While he emphasizes systems thinking as foundational to a learning organization, it alone will not create a learning organization.

Building Blocks of a Learning Organization (Garvin, 1993)

Garvin's (1993) learning organization model attempted to provide a foundation on which managers could build a learning organization. He defines a learning organization as an organization that is "skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights." This definition highlights that learning has not occurred unless it is accompanied by changes in the way work gets done. He identifies five building blocks of a learning organization: systematic problem solving, experimentation, learning from past experience, learning from others, and knowledge transfer.

Systematic problem solving involves relying on the scientific method for diagnosing problems, insisting on data as background for decisions, and using simple statistical tools to organize data and draw inferences. This requires employees to be more disciplined in their thinking and more accurate and precise. It is important to push beyond obvious symptoms to assess underlying causes.

Experimentation involves the systematic search for and testing of new knowledge so that the organization may move from knowing how things are done to having a deep understanding of why they are done. Experimentation is motivated not by current difficulties, but by exploring opportunities. Experimentation takes two main forms: ongoing programs and one-of-a-kind demonstration projects. Ongoing programs are small experiments which are designed to produce incremental gains in knowledge. Successful ongoing programs seek to ensure a steady flow of new ideas. They require a culture that rewards risk taking and in which managers and employees have the skills to perform and evaluate experiments. Demonstration projects are large, system-wide changes typically introduced at one site with the goal of developing new organizational capability and learning that can be rolled out to other parts of the organization. They involve "learning by doing" and require explicit strategies for the transfer of learning in order for their impact to be felt throughout the organization.

Learning organizations are adept at learning from past experience. They systematically assess their successes and failures, record lessons learned from them, and make those lessons accessible to their employees. Failures, in particular, are seen as rich opportunities for learning and are valued more than successes whose causes are unknown. In addition to learning from past experience, learning organizations learn from the experiences of others. One way organizations go about this is through benchmarking. This involves uncovering, analyzing, adopting, and implementing best practices from other companies. Customers also serve as a source of external knowledge. They can provide competitive comparisons and immediate feedback on products and services.

Knowledge transfer is the last part of Garvin's model. For learning organizations to be successful, knowledge needs to be spread throughout the organization in a quick and efficient manner. This can be done in a variety of different manners such as through written reports, education and training programs, verbal communication, personnel rotations, and site visits or tours. Each method of transferring knowledge has advantages and disadvantages. For example, while reports are a very common way of transferring information, they are a form of passive,

rather than active learning. Personnel rotations are very powerful methods of transferring knowledge, as individuals get to actively experience new knowledge. In addition to method, incentives also impact the effectiveness of knowledge transfer. Employees have more incentive to learn if they know that their learning will be applied in the organization.

Garvin highlights the steps that organizations must take in order to become learning organizations. First, organizations must create an environment that is conductive to learning. This includes allowing time for employees to reflect, analyze, do strategic planning, examine customer needs, invent new products, and assess current work systems. Next, organizations need to open up boundaries allowing ideas and learning to be exchanged across the organization. Lastly, the organization needs to design programs and events that are specifically designed for learning. This can take the form of symposiums, systems audits, or strategic reviews.

The System-Linked Learning Organization (Marquardt, 1996)

Marquardt (1996) defined learning organizations as organizations "that are continually transforming themselves to better manage knowledge, utilize technology, empower people, and expand learning to better adapt and succeed in the changing environment." He proposes a model of a "system-linked" learning organization and identifies five subsystems: learning, organization, people, knowledge, and technology.

Learning subsystem. The learning subsystem consists of three levels of learning (individual, group/team, and organizational), four types of learning (adaptive, anticipatory, deutro, and active), and six learning skills (systems thinking, mental models, personal mastery, team learning, shared vision, and dialogue). In regards to the levels of learning, at the individual level, employees have a responsibility not only for their learning, but also for the learning of others. At the group/team level, teams in a learning organization need to be able to generate knowledge and transfer that knowledge efficiently within the team and throughout the organization. The organizational level of learning encompasses the shared insights, knowledge, and mental models of members of the organization. It is also important that the organization is able to build on past knowledge and experience.

The four types of learning describe how organizations approach learning. The first type, adaptive learning, is characterized by learning from experience. On the other hand, when an organization envisions an ideal future and learns by seeking ways to achieve that vision, this is described as anticipatory learning. The third type of learning is deutro learning which is described as learning about learning. This type of learning takes place when members of the organization reflect on previous learning to uncover actions that facilitated or inhibited learning, to invent new strategies for learning, or to evaluate or generalize what the organization has produced in the past. The fourth type of learning is action learning. Action learning programs involve employees working to solve real organizational problems. While implementing a solution to the problem is an intended outcome of action learning, the focus is on the learning acquired.

The learning skills that are part of the learning subsystem of Marquardt's model echo the disciplines of Peter Senge's model: systems thinking, mental models, personal mastery, team learning, shared vision, and dialogue. Please review above for a description of these skills. Marquardt presents dialogue as a separate skill, while Senge included the skill under team learning.

Organizational subsystem. The organizational subsystem points to the need for companies to align their vision, culture, strategy, and structure to encourage and support learning. In regards to the vision of the organization (which was also included as a skill of the learning subsystem) it is important for the organization to foster a shared vison among its members. Particularly, creating a shared learning vision will foster the belief that the company cannot accomplish its goals without becoming a learning organization. A shared vision provides the focus and energy behind learning and can inspire organizational members to think and act differently. This is important for encouraging risk-taking and experimentation. Being pulled toward a common and compelling goal makes it more likely that people will challenge the status quo and more readily question established ways of thinking. Additionally, having a shared vision aids in determining what needs to be learned and what learnings need to be stored and transmitted throughout the organization.

The culture of a learning organization is one that facilitates, encourages, and rewards learning. This includes a shared responsibility for learning in which each employee is both a learner and a teacher. Risk-taking and innovation are encouraged, mistakes are valued as sources of learning, and there exists a commitment to continuous improvement of products and services. The organization invests in training and development, there are opportunities to learn from experience on a daily basis, and feedback and disclosure are common.

The strategy of a learning organization incorporates learning into all business operations and learning is viewed as a source of strategic advantage. The organization aligns its staffing policies so that it recruits, rewards, promotes, and retains people who continually learn and who enhance learning in others. The organization provides a large number of learning opportunities and allows employees to set aside time for learning, reflecting, and inventing. Additionally, the physical layout promotes learning. There are outside spaces which organizational members can view from their workspaces or spend time in and the layout encourages sharing and minimizes divisions.

The organizational structure of a learning organization also promotes the sharing of learning and knowledge. The organization is relatively flat, i.e., has minimal hierarchy, and is organized around project teams. Bureaucracy is minimized, boundaries are highly permeable, and networking within and outside of the organization occurs regularly. Work units or teams are small, and entrepreneurial thinking is encouraged.

People subsystem. The people subsystem of Marquardt's model focuses on various groups of stakeholders including employees, managers/leaders, customers, suppliers/vendors, alliances, and the community. In a learning organization, employees are empowered and enabled. Employees are treated like mature and capable workers and authority is delegated so that responsibility rests as close to the point of action as possible. Employees are included in developing strategies and the organization balances its needs with the needs of employees. Leaders in a learning organization take on a new role. Instead of managing, they are tasked with teaching and mentoring. Leaders must role model learning, advocate for the learning process and support learning projects. They help redefine the structure, strategy, networks and teams to align with the goals of the learning organization.

Stakeholders outside of the organization are also part of the people subsystem of a learning organization. Customers serve as a rich source of learning regarding product information, competitor analysis, changing preferences, and patterns of use. Short term alliances

with other companies can also provide a source of learning through providing intelligence on customers, different ways of carrying out processes, or cutting edge policies and procedures. Additionally, learning organizations share their learning with suppliers, vendors, and the larger community. Doing so helps strengthen those relationships, elevates the performance of suppliers, enhances the company's image, and prepares and attracts the future workforce.

Knowledge subsystem. Learning organizations are continually acquiring, creating, storing, retrieving, transferring and utilizing knowledge. Knowledge can be acquired from sources external to the organization or from internal sources. External sources of knowledge acquisition include benchmarking, conferences, economic or technological trends, or new staff members. Knowledge acquired internally often comes from tapping into the knowledge of current staff members, learning from experience, or implementing continuous change processes that serve as a source of learning. These methods, along with experimentation can also be used to create new knowledge in an organization.

Knowledge that has been acquired or created needs to be effectively stored and retrieved as needed so that what has been learned is not lost. Prior to knowledge being stored, the organization must decide what information is important to retain and how best to retain it. Knowledge should be stored so that it is easily found and quickly retrieved. This includes considering how information is categorized and organized. Care also needs to be taken in how information is retrieved to ensure it is done accurately and completely. The transfer of knowledge occurs both intentionally and unintentionally and involves moving information through mechanical, electronic, or interpersonal means. During transfer, the meaning, form, accuracy, and availability of information is impacted by several factors including the cognitive capacity of those receiving the information, distortion of the message either intentionally or unintentionally, the cost of transferring knowledge, and delays in transferring the information.

Technology subsystem. The last subsystem of Marquardt's model is the technology subsystem which encompasses the technological networks and tools that allow employees to access and exchange information. This subsystem is divided into three dimensions: information technology, technology-based learning, and electronic performance support systems. Information technology includes the computer-based systems that allow organizations to automate processes and provide information where it is most effective. It allows communication across space and time and increases the flexibility of where and how work is done and information is accessed. Technology-based learning puts more control in the employees' hands in regards to what they learn and when they learn. Lastly, performance support systems provide just-in-time information to employees to improve job performance. This information can include product details, maintenance manuals, job aids, industry, market, competitor, or customer data, and links to external software.

Similar to Senge, Marquardt emphasizes that all five of the subsystems are necessary to create a learning organization. He also stresses that the process of becoming a learning organization is never finished. Marquardt includes many steps to becoming and sustaining a learning organization, including establishing a strong sense of urgency about becoming a learning organization, removing obstacles that prevent others from acting within the new vision, and creating short-term wins and using the credibility gained from those wins to tackle bigger problems.

Learning Organization Action Imperatives (Marsick & Watkins, 1999)

Marsick and Watkins (1999) created and refined a model of the learning organization that includes 3 components: 1) systems-level, continuous learning; 2) that is created in order to create and manage knowledge outcomes; 3) which lead to improvement in the organization's performance, and ultimately its value, as measured through both financial assets and non-financial intellectual capital. Systems-level, continuous learning requires an organization to have systems, structures, processes, and a culture in place to support and embed learning so that it can endure even when the members of the organization do not. Knowledge management involves the intentional and effective management of knowledge outcomes. This must go beyond simple data storage and include capturing the meaning garnered from knowledge that has been created. Lastly, in a learning organization, learning is a means to an end and those ends include financial gains and non-financial gains in human capital, structural capital, and customer capital.

Their model of the learning organization highlights four levels of learning: individuals, groups and teams, the organization, and the community and society (Watkins and Marsick, 1993). At each level, learning becomes increasingly collective and interdependent. Learning is a social activity that occurs as people work together to achieve goals. As individuals interact—make meaning of events, share those insights, and move towards consensus—learning at the group level occurs. This group level learning can lead to organizational level learning as members make sense of the espoused and enacted values and visions of the organization and move toward a shared meaning. Organizations are also connected to the external environment—society at large. Thus, learning organizations develop healthy relationships with their physical, social, and cultural environments. These relationships are facilitated through corporate social responsibility, contributing to social causes, policies that balance work and family life, and increasing the quality of life at work.

For an organization to transform into a learning organization, the authors identify seven action imperatives. The first action imperative is to create continuous learning opportunities. This is achieved by crafting work in a way that enhances on-the-job learning as well as providing more formal, on-going opportunities for learning. While many companies have formal training and development, fewer are as intentional about informal learning. The authors present a continuum of learning activities from informal to formal. At the informal end resides unanticipated experiences which result in learning either consciously or unconsciously, new job assignments or job-related challenges, and self-planned experience such as seeking a mentor or attending a conference. Next, organizations should promote inquiry and dialogue. This requires a climate of trust within the organization. The culture needs to support questioning and allow people to express their views as well as inquire into the views of others. The third action imperative is to encourage collaboration and team learning. This can be achieved through designing work to utilize teams, communicating the expectation that teams learn together and work together, allowing teams the freedom to make decisions, and supporting work across boundaries and levels. Additionally, teaching the skills of framing, reframing, experimentation, crossing boundaries, and creating an integrative perspective can enhance team learning.

The fourth action imperative involves establishing systems to capture and share learning so that learning is retained in the organization even when organization members are not. While technology is valuable in recording and disseminating information, organizations must not overlook low technology means. Next, learning organizations must empower people towards a

collective vision. Members of the organization at all levels are involved in setting the vision. They know what the big picture looks like, know how to get things done in the organization, they have a budget with which to take action, and have knowledge of how to influence and work with others. The sixth action imperative of the learning organization is to connect the organization to its environment through a systems perspective. Members of the organization recognize the interdependence between their work, the organization, and its external environment. Members also scan the environment for useful information to inform work practices. In later versions of the model, the authors included a seventh action imperative; leaders who model and champion learning (Marsick and Watkins, 1999). Such leaders make space for learning and share best practices across the organization.

If an organization wants to become a learning organization, one of the first steps the authors propose is to conduct an audit of the current capacity of the organization to learn and change (Watkins and Marsick, 1993). The seven C's of a learning organization presents a framework with which this audit can be conducted. This framework directs organizational leaders to examine the extent to which learning in their organization is:

Continuous:	Learning is relevant, evolves directly out of work experiences, and is immediately useful. The learning is often informal and occurs just-in-time.
	Are there opportunities for informal learning from mentors, through job rotations or other challenging assignments?
Collaborative:	The organization and its members care for other individuals and work cooperatively on meaningful tasks. There are opportunities to learn together, the organization encourages interactions, and people feel valued.
	Are employee needs accommodated through alternative work options?
Connected:	The structure of the organization encourages a high level of interdependence, members of the organization feel they are working towards a longer-term goal that betters the lives of those around them and feel connected to external stakeholders including suppliers, customers, and society at large.
	Do employees truly partner with their internal and external customers?
Collective:	Learning is aggregated and groups forge a common understanding of organizational acts and intentions through inquiry, dialogue, and challenging ideas and assumptions.
	Are organizational members encouraged to challenge their managers and share other perspectives?
Creative:	Involves thinking in new ways and can apply to the organization's services or products, processes and procedures, or learning system.

Are employees rewarded for experimentation and taking appropriate risks?

Captured and codified: New learning is reflected in new policies and procedures crafted in a participatory manner, systems of capturing learning are motivating and accessible.

After completing key projects, do employees reflect on their experiences and alter any plans as needed?

Capacity building: Systems build the overall capacity of the organization to grow and learn continuously.

Does the organization invest in the learning of all shareholders, including external stakeholders?

Synthesis of Learning Organization Theories

With the varied theoretical frameworks on a learning organization, it is no wonder why organizations have struggled to adopt this concept. However, while differences exist in the above theories, there are also many areas of agreement and overlap which can serve as a focal point for organizations wishing to start on the learning organization journey. Marquardt's Systems-Linked Organizational Model fully encompasses and expands upon Senge's five disciplines of a learning organization and overlaps a great degree with Garvin's building blocks and Marsick and Watkins model of a learning organization.

The first major area of overlap involves systemically approaching and solving problems. Marquardt, Senge, and Watkins and Marsick point to systems thinking as the means of achieving this, while Garvin calls for systematic problem solving. Senge identifies this discipline as the corner stone of a learning organization, without which the other disciplines are ineffective. All three theories agree that organizations and their members must systematically explore the problems they face, looking beyond obvious symptoms of problems and surfacing the underlying causes or structures.

The second major area of overlap in learning organization theories involves the culture and climate of the organization. The culture of a learning organization needs to foster learning. This includes providing space and time for the activities of learning, including reflection, strategic thinking or planning, innovation and invention, and personal development. Members of the organization are empowered and enabled to make decisions and direct their work. Learning organizations have a climate of openness. Ideas, information, and learning are shared across organizational boundaries, both internal and external. Debate is a welcome, normal part of problem solving. Organizational members are expected to question assumptions (others' as well as their own) and challenge the status quo. Additionally, learning organizations have a culture which supports risk-taking and views mistakes as a source of learning. This orientation supports the third major area of overlap; experimentation.

Learning organizations experiment as a way of learning by doing and testing new ways of doing things. Senge calls for the use of microworlds, which are simulations that allow organizational members to experiment with reality. These simulations can accelerate time so

that participants experience consequences which would normally take a long time to manifest. Marquardt calls out action learning as a means of learning by doing and highlights the need for incentives for experimentation, innovation and risk-taking. Garvin includes experimentation as one of the building blocks of his model and highlights the proactive nature of experimentation as opening new horizons versus fixing existing problems. Marsick and Watkins (1999) cited experimentation as a skill necessary to enhance team learning.

Learning is driven and focused by a shared vision which all members of the organization believe in and to which all members are committed. Marquardt includes shared vision in the learning subsystem and the organizational subsystem of his systems-linked model stating that along with the culture, structure, and strategy, organizations need to transform their vision to a shared one in order to become a learning organization. Senge instructs that the first step in creating a shared vision is to encourage organization members to have a personal vision. Watkins and Marsick echo the link between personal vision and shared vision. All three models highlight the importance of leaders empowering members of the organization to create a shared vision which aligns to their personal vision versus leadership dictating the vision and getting organizational members to comply with it.

Many of the learning organization models above also address the structure of the learning organization. Bureaucracy and hierarchy are identified as impediments to learning. Watkins and Marsick (1993) point out three flaws of bureaucratic organizations. First, the choices about the value and purpose of activities are removed from the actual performance of those activities. When learning does occur, it is narrowly focused on routine tasks and procedures. Lastly, feedback about results is fragmented so that organizational members never learn how their performance affects the organization's overall goals. In essence, bureaucracy disconnects organizational members from the decision regarding their work and from the outcomes of their work, limiting their opportunity to experiment and learn. Beyond removing bureaucracy the models stress the importance of moving decision-making as close to where the work is done as possible. This can be achieved through removing hierarchical organizational layers, decentralizing control, and empowering and enabling members of the organization to make decisions regarding their work.

Organizations focus energy and resources on what is measured and rewarded. Thus, learning organizations measure learning as an important organizational outcome. They track the results of learning beyond simple measures of cost and productivity by tracking improvements in quality, customer service, and new product launches. Additionally, learning is recognized and rewarded through the performance review process, bonuses and incentives for learning, awards and recognition programs, promotions, and attractive job assignments.

The last area of major overlap between the theories discussed involves the organization's interaction with external stakeholders. Watkins and Marsick identify the broader society as the highest level at which learning takes place and include connecting with the environment as an action imperative of learning organizations. Garvin notes the importance of learning from others and utilizing benchmarking, even of companies in different industries. Likewise, in the people subsystem of Marquardt's systems-linked model, he includes customers, suppliers/vendors, other companies, and the greater community as stakeholders in an organization's learning. These external sources serve as both a source of learning and a consumer of learning. Learning organizations scan their environments for new information that

will inform, impact, or serve as leverage for their organization, they actively seek to learn from customers, competitors, and their broader industry. Additionally, learning organizations include the broader community in learning activities which can include providing learning opportunities to customers, suppliers, or potential future employees.   Beyond learning from or sharing learning with external stakeholders, Watkins and Marsick, Senge, and Marquardt all discuss the need for learning organizations to care for the overall well-being of organizational members and their families through family-friendly policies such as flexible work schedules or dependent care, and wellness programs.

Learning Organization Measures

For any organization wishing to transform to a learning organization, it is important that the organization first understands their current state including their strengths and weaknesses as it relates to learning. Except for Peter Senge, each of the authors whose models are described above provide a learning organization assessment tool which organizations can use to measure their current state and use to track their progress to becoming a learning organization.

Learning Organization Profile

In his book, Marquardt includes the Learning Organizational Profile (Appendix A), which consists of ten questions measuring each of the five subsystems, as a tool which organizations can use to identify strengths and weaknesses. Studies utilizing this tool have found several variables to predict whether an organization is a learning organization including rewards and recognition, training and development, transformational leadership, and a generative and adaptive culture (Griego, Geroy, & Wright, 2000; Rijal, 2010). However, the psychometric properties of this tool and the process used to develop this tool have not been reported in research. Rijal (2000) removed half of the items on the tool from his analysis due to low reliability, but information on which items were removed was not provided.

Dimensions of the Learning Organization

Marsick and Watkins (1999) developed a questionnaire based on their model of the learning organization. This questionnaire, titled the Dimensions of the Learning Organization Questionnaire (DLOQ) is based on the seven action imperatives outlines in Marsick and Watkin's model (1999) and includes qualitative measures of organizational performance. The DLOQ contains 43 items (see Appendix B) measured on a six point Likert-type scale. Items were constructed based on the author's experience with organizations that became learning organizations. Card-sorting was used to verify the fit of items within each dimension and the items were refined over time, based on the results of pilot tests, to improve the reliability, factor structure, and wording of items. A version with 21 items was recommended by Yang et al. (2004) based on the results of a confirmatory factor analysis.

The DLOQ has been used extensively in learning organization research in 15 countries (Kim, Egan, & Tolson, 2015). The majority of studies using the DLOQ have examined learning culture as an independent variable and explored its relationship with various outcomes. Very few studies utilizing the DLOQ have examined the antecedents of the learning organization. In a review of research using the DLOQ Kim, Egan, and Tolson (2015) highlight issues with the development of the tool and its psychometric properties. They note that exploratory factor analysis of the DLOQ was not reported as part of the development of the tool, and subsequent

analyses have yielded incoherent factor structures. Indeed, Yang, Watkins, and Marsick's (2004) attempt to validate the original 43 item tool revealed high correlations between the dimensions and inadequate fit of the seven factor structure. These findings indicate a need to reexamine the underlying model used to develop the tool. The authors instead chose to remove half of the items from the tool to achieve more adequate fit of the seven factor structure. This calls into question the construct validity of the tool.

Army Learning Organization Questionnaire. The Australian Army adapted the DLOQ and a measure of organizational learning, the Organizational Learning Survey (OLS) (Goh & Richards, 1997), to create a learning organization measurement tool for the Army titled the Army Learning Organization Questionnaire (ALOQ, see Appendix C) (Stothard, 2014). To create the ALOQ, researchers adapted the language of each survey for the military context. The new items were pilot tested on various samples and feedback was obtained from pilot participants regarding the quality and meaning of the items. Items were edited or removed based on this feedback and data on the reliability of the scales. This resulted in a measure with 43 items from the DLOQ, 21 items from the OLS and an additional, Army-specific item.   The researchers conducted an exploratory factor analysis to determine if the new items matched the theoretical models of the original measures. The researchers reported that the items adapted from the DLOQ loaded on eight factors (as opposed to seven in the DLOQ) and items from the OLS loaded on four factors like the original measure. However, closer examination of the factor loading matrices reveals that approximately half of the items have factor loadings below .600. Additionally, while the authors only present factor loadings for items on the intended factor, they do show some items as double loading on multiple factors. This indicates, that similar to the factor structure issues identified with the DLOQ, the ALOQ may be over factored and does not conform to the original model.

Learning Organization Survey

Garvin, Edmondson, and Gino (2008) developed a diagnostic tool to allow organizations to determine the extent to which they are functioning as a learning organization (Appendix D). The tool is organized around three building blocks of a learning organization: a supportive learning environment, concrete learning processes and practices, and leadership that reinforces learning. These building blocks differ from the ones Garvin proposed in 1993 (detailed above). The authors criticize early learning organization models as lacking sequential steps that managers can implement and directing their guidance to senior executives rather than middle managers, who are close to the work being done. Thus, the building blocks and the tool presented seek to address these shortcomings.

A supportive learning environment, the first building block of the tool includes a feeling of psychological safety in which members of the organization can disagree with peers or superiors, ask questions, and admit mistakes without being belittled. In line with being able to disagree, supportive learning environments appreciate different points of view and outlooks, encourage members to take risks and experiment, and provide time for reflection.

The second building block examines the learning processes and practices of the organization to measure the extent to which the organization generates, collects, interprets, and disseminates information. This can include experimentation, intelligence gathering, and systematically sharing information internally and externally. The final building block is concerned with learning being reinforced by the organization's leadership. This is exhibited

when leaders prompt dialogue, place importance on activities such as reflection and knowledge transfer, and invite alternative viewpoints.

The Army as a Learning Organization

The Army's need to develop Soldiers and leaders who can learn and adapt quickly to an ever changing enemy is well documented (U.S. Department of the Army, 2011; 2014). Learning is viewed as a competitive advantage for the Army, and thus the Army needs to take "immediate action to develop a capacity for accelerated learning that extends from organizational levels of learning to the individual Soldiers…" (U.S. Department of the Army, 2011, p. 5). Over twenty years ago the Army began to refer to itself as a learning organization. In 1994, U.S. Army Chief of Staff Margaret Wheatley declared that the Army is a learning organization; a sentiment echoed by General Gordon Sullivan (DiBella, 2010). In the same year, General David Petraeus stated that it was "imperative to continue to learn and adapt…and to strive to ensure that our units are learning organizations" (DiBella, 2010).

This characterization of the Army as a learning organization has led several military professionals to evaluate this claim (Gerras, 2002; Dennis, 2010; DiBella, 2010; Williams, 2007). While these military professionals all state that the Army is not a learning organization, it is important to note that all learning organization theorists agree that the learning organization is a journey not a destination. By discussing the Army as a learning organization, Army leaders have taken the first step on the journey to becoming a learning organization. The above-mentioned evaluations of the Army as a learning organization highlight both strengths which the Army can leverage, as well as areas that need to be addressed in order for the Army to become a learning organization. Three such areas include: 1) the learning organization concept in Army training and doctrine; 2) knowledge management and learning from the past; and 3) the hierarchical culture of the Army. Following is a review of the strengths and opportunities presented by these areas.

Army Training and Doctrine

Gerras (2002), Dennis (2010), and DiBella (2010) all highlight that Army literature lacks a clear definition for what a learning organization is and clear guidance on how to become a learning organization. Gerras (2002) believes that the Army does not understand what a learning organization looks like or how to become one. This is seen as a major shortfall as Army leaders need to know what is expected of them towards becoming a learning organization. Dennis (2010) conducted a review of Army doctrine as it relates to Senge's (1990) five disciplines. While Senge's concepts are not explicitly discussed in doctrine, the concepts of Mission Command and Design align with the concepts of the learning organization. Design requires commanders to draw on various sources of knowledge when making decisions. Mission command decentralizes control by providing commanders with the intent of the mission, and empowering them to determine what actions to take to achieve the mission. In other words, a shared vision is created and decision-making is decentralized, empowering units to act to accomplish the mission.

Army Doctrine Reference Publication (ADRP) 6-22 Army Leadership (2012), which was most recently updated after Dennis' (2010) review, provides a description of a learning organization, stating that:

Based on experience, learning organizations adopt new techniques and procedures that complete jobs more efficiently or effectively. Likewise, they discard techniques and procedures that have outlived their purpose. Learning organizations create a climate that values learning in its members. Leaders actively identify and support opportunities for education, training and experience. (p. 7-3)

Additionally, ADRP 6-22 aligns with the concept of team learning in encouraging subordinates to challenge plans if they identify issues they believe will lead to failure. Superiors are instructed to empower their subordinates to take initiative in executing intent-based orders.

Although there is a description of the learning organization in Army doctrine and some overlap of Army concepts with learning organization concepts, neither these concepts nor the skills needed in a learning organization are included in a Soldier' education. Dennis (2010) suggests expanding the discussion of learning organization concepts in doctrine to more clearly define and instruct officers in how to create a learning organization and Gerras (2002) and Williams (2007) suggest incorporating training on these concepts and skills early in a Soldier's career. In order to do this effectively, the Army will need to conduct research to understand:

- What indicators determine whether, or to what extent, the Army is a learning organization?
- What does learning look like at different echelons?
- What outcomes related to the learning organization are expected at each echelon and how can they be measured?

Knowledge Management

Much of the learning organization literature recognizes the Army's After Action Review (AAR) process, which many private companies have adopted, as a best practice in learning. AARs are a tool for team reflection and learning. After a mission the team reflects on what was supposed to happen, what actually happened, why it happened, and what changes could improve future performance. AARs are just one piece of information collected by the Center for Army Lessons Learned (CALL) whose objective is to create a culture in the Army in which every Soldier has the responsibility of collecting and sharing information and to create a system through which information can be collected, analyzed, and disseminated (U.S. Department of the Army, 2006). Relevant information and learning captured by CALL is integrated into Army training and doctrine. While the business world has turned to the Army as an example in capturing lessons, Williams (2007) notes problems with how the Army processes lessons. First, attempting to access information can be overwhelming, with searches returning thousands of hits. Next, Army leadership is concerned that units are not sharing lessons that they have learned with TRADOC or with other units. Third, the lessons learned program focuses almost entirely on collecting information, with little attention given to analyzing, synthesizing, and incorporating lessons. Lastly, Soldiers may disregard lessons that conflict with their mental models of how the world works. Doing so means that lessons do not get incorporated into operations, behavior is not changed, and mistakes are repeated. To become a learning organization the Army needs to

improve knowledge management so that learning is effectively captured, synthesized, stored, and disseminated. To assist in this, the Army will need to understand:

- What current strengths can the Army leverage or modify and what does the Army need to stop doing in order to become a learning organization?
- How can the Army leverage Soldiers who are highly motivated to learn?

Hierarchical Army Culture

The Army, by necessity, has a rigid hierarchical structure in which it is easy to discern who outranks whom. However, the learning organization literature sees hierarchy as an impediment to learning. The Army professionals evaluating the Army as a learning organization point to many issues with hierarchy and learning in the Army. For one, hierarchy is not simply the organizational structure of the Army; it is the culture of the Army. Soldiers hold mental models about the way they should interact with one another, with superiors, and with subordinates. These mental models may include avoiding raising issues or problems if doing so may be perceived negatively, or a belief that candor and admitting mistakes are not rewarded and can hurt chances of promotion. The idea suggested in the learning organization literature that to facilitate team learning, participants must view each other as colleagues regardless of position "goes against centuries of military tradition on senior-subordinate relationships" (Gerras, 2002, p9). While hierarchy is identified as an impediment to learning, the rigid, hierarchical structure of the Army is necessary at times when decisions are life or death and critical to the success of the mission.

Furthermore, given the hierarchical culture of the Army, superiors have more impact over a Soldier's life and career than in the private sector. One such example of this is the performance appraisal processes, including the Officer Evaluation Report (OER) and the Non-Commissioned Officer Evaluation Report (NCOER). The Army utilizes a central selection process, thus these performance appraisal tools serve as the key criteria used for allocating rewards and as the major distinguisher between Soldiers when determining promotions and schooling (Gerras, 2002). Ratings that are average or below can limit opportunities and rewards. Thus, Soldiers are not likely to raise issues or disagree with their superiors if they believe doing so might negatively impact their performance appraisal.

Due to its perceived ability to influence behavior, the performance appraisal process has the potential to help transition the Army to a learning organization. Gerras (2002) and Williams (2007) suggest including behaviors related to the learning organization in performance appraisals. Both authors believe that doing so would be highly effective in changing the culture of the Army. Learning would be rewarded, and over time Army leaders who do not support a learning organization would be weeded out.

Given that the hierarchical culture of the Army is not likely to change, Army leaders should seek to understand how to overcome obstacles to learning presented by the hierarchy and how to leverage it to encourage and reward learning.

- How do ideas with merit from the lowest levels of a very hierarchical organization get consideration in everyday dialogue and discussion?

- How do you encourage leaders at lower levels to express ideas in the presence of higher ranking leaders and how do you prevent higher ranking leaders from dismissing those ideas?
- How can the Army directly address the cultural barriers to becoming a learning organization?

Conclusion

This paper reviewed four models of the learning organization: Peter Senge's five disciplines, David Garvin's building blocks of a learning organization, Michael Marquardt's systems-linked learning organization, and Karen Watkins' and Victoria Marsick's action imperatives. While each model provided its own definition and delineation of the learning organization, there were many areas of clear consensus on what it means to be a learning organization. First, an organization never fully becomes a learning organization, but is a learning organization through the alignment of its policies, systems, structure, and culture, through the regular practice of learning, and through using that learning to adapt. Next, the models converge on the concept of a learning organization as a non-bureaucratic, relatively flat organization that has a shared vision in which learning is a key competitive advantage. The organization fosters a climate where employees are empowered, learning and experimentation are rewarded, and problems are addressed in a systematic manner. Learning is gained from and shared with external sources and important outcomes related to learning are measured. Despite the consensus across models it is important to note that little empirical evidence exists to support the concept of the learning organization. The models reviewed above were developed based on work with organizations in the private sector, so there is a need for research to help determine the components of a learning organization and how those components relate to important organizational outcomes.

Despite the lack of empirical support, the concept of the learning organization gained popularity in the business world, and gained attention among Army leaders. These leaders recognize the utility of the Army adopting the learning organization as it works to create "agile, adaptive, and innovative leaders who thrive in conditions of uncertainty and chaos, and are capable of visualizing, describing, directing, leading, and assessing operations in complex environments and against adaptive enemies" (U.S. Department of the Army, 2014, p. 32). The Army has begun to write learning organization concepts into doctrine, both explicitly and implicitly, however it will need to conduct research to determine what learning organization components are relevant to the Army context, how to effectively adopt those components, and how to measure the effectiveness of the Army as a learning organization. It will be imperative that the Army align its systems, structures, doctrine, and culture to truly transform into a learning organization. This change is necessary to "maintain a competitive advantage against increasingly capable and determined adversaries…and win in a complex world" (U.S. Department of the Army, 2014, p. 24).

References

DiBella, A. J. (2010). Can the Army become a learning organization? *Joint Force Quarterly*, *56*(1), 117 – 122.

Garvin, D. A. (1993). Building a learning organization. *Harvard Business Review*, *71*(4), 78-91.

Garvin, D. A., Edmondson, A. C., & Gino, F. (2008). Is yours a learning organization? *Harvard Business Review*, *86*(3), 109-116.

Gerras, S. J. (2002). *The Army as a learning organization*. (USAWC Strategy Research Project). Carlisle, PA: U.S. Army War College.

Goh, S., & Richards, G. (1997). Benchmarking the learning capability of organizations. *European Management Journal, 15*(5), 575-583. DOI: 10.1016/S0263-2373(97)00036-4

Kim, J., Eagan, T., & Tolson, H. (2015). Examining the dimensions of the learning organization questionnaire: A review and critique of research utilizing the DLOQ. *Human Resource Development Review, 14*(1), 91-112. DOI: 10.1177/1534484314555402

Kingsbury, P. (1999). *Analysis of learning organization theories and their application to public organizations*. (USAWC Strategy Research Project). Carlisle, PA: U.S. Army War College.

Marquardt, M. J. (1996). *Building the Learning Organization: A systems Approach to Quantum Improvement and Global Success*. New York: McGraw-Hill.

Marsick, V. J., & Watkins, K. E. (1999). *Facilitating learning organizations: Making learning count*. Brookfield, VT: Grower Publishing Limited.

Senge, P. (1990). The Fifth Discipline: The Art and Practice of the Learning Organization. New York: Doubleday.

Stothard, C. (2014). *The Army learning organisation questionnaire: Developing a valid and reliable measure of learning organisation characteristics* (DSTO-TN-1325). Victoria, Australia: Defense Science and Technology Organization.

U.S. Department of the Army, (2006). *The Army Lessons Learned Program*, (Army Regulation 11-33). Washington, DC: Author.

U.S. Department of the Army, (2012). *Army Leadership, (ADRP 6-22)*. Washington, DC: Author.

U.S. Department of the Army, (2014). *The U.S. Army Operating Concept: Win in a complex world,* (TRADOC Pamphlet 525-3-1). Fort Eustis, VA: Author.

Watkins, K. E. & Marsick, V. J. (1993). *Sculpting the learning organization: Lessons in the art and science of systemic change*. San Francisco: Jossey-Bass Publishers.

Williams, J. D. (2007). *Is the U.S. Army a learning organization?* (USAWC Strategy Research Project). Carlisle, PA: U.S. Army War College.

Learning Organization Profile
(Marquardt, 1993)

Learning Dynamics: Individual, Group or Team, and Organization

1. We see continuous learning by all employees as a high business priority.
2. We are encouraged and expected to manage our own learning and development.
3. People avoid distorting information and blocking communication channels, using such skills as active listening and effective feedback.
4. Individuals are trained and coached in learning how to learn.
5. We use various accelerated learning methodologies (e.g. mindmapping, mnemonics, peripherals, imagery, music, etc.).
6. People expand knowledge through adaptive, anticipatory, and creative learning approaches.
7. Teams and individuals use the action learning process (that is, they learn from careful reflection on problem situations, and then apply their new knowledge to future actions.).
8. Teams are encouraged to learn from one another and to share learnings in a variety of ways (e.g., via electronic bulletin boards, printed newsletters, intergroup meetings, etc.).
9. People are able to think and act with a comprehensive, systems approach.
10. Teams receive training in how to work and learn in groups.

Organization Transformation: Vision, Culture, Strategy, and Structure

1. The importance of being a learning organization is understood throughout the organization.
2. Top-level managers support the vision of a learning organization.
3. There is a climate that supports and recognizes the importance of learning.
4. We are committed to continuous learning for improvement.
5. We learn from failures as well as successes.
6. We reward people and teams for learning and helping others learn.
7. Learning opportunities are incorporated into operations and programs.
8. We design ways to share knowledge and enhance learning throughout the organization (e.g. systematic job rotation across divisions, structured on-the-job learning systems).
9. The organization is streamlined--with few management levels--to maximize communication and learning across all levels.
10. We coordinate on the basis of goals and learning rather than maintain separation in terms of fixed departmental boundaries.

People Empowerment: Employee, Manager, Customer, and Community

1. We strive to develop an empowered workforce able to learn and perform.
2. Authority is decentralized and delegated.
3. Managers and nonmanagers work together in partnership to learn and solve problems together.
4. Managers take on the roles of coaching, mentoring, and facilitating learning.
5. Managers generate and enhance learning opportunities as well as encourage experimentation and reflection on what was learned so that new knowledge can be used.

6. We actively share information with our customers to obtain their ideas to learn and improve services and products.
7. We give customers and suppliers opportunities to participate in learning and training activities.
8. Learning from partners (subcontractors, teammates, and suppliers) is maximized through up-front planning of resources and strategies and strategies devoted to knowledge and skill acquisition.
9. We participate in joint learning events with supplies, community groups, professional associations, and academic institutions.
10. We actively seek learning partners among customers, vendors, and suppliers.

Knowledge Management: Acquisition, Creation, Storage and Retrieval, and Transfer and Use

1. People actively seek information that improves the work of the organization.
2. We have accessible systems for collecting internal and external information.
3. People monitor trends outside our organization by looking at what others do--for example, by benchmarking best practices, attending conferences, and examining published research.
4. People are trained in the skills of creative thinking and experimentation.
5. We often create demonstration projects to test new ways of developing a product or delivering a service.
6. Systems and structures exist to ensure that important knowledge is coded, stored, and made available to those who need and can use it.
7. People are aware of the need to retain important organizational learnings and share such knowledge with others.
8. Cross-functional teams are used to transfer important learning across groups, departments, and divisions.
9. We continue to develop new strategies and mechanisms for sharing learning throughout the organization.
10. We support specific areas, units, and projects that generate knowledge by providing people with learning opportunities.

Technology Application: Information Systems, Technology-Based Learning, and EPSS (Electronic Performance Support Systems)

1. Learning is facilitated by effective and efficient computer-based information systems.
2. People have ready access to the information highway (local area networks, internet, online, etc.).
3. Learning facilities (e.g. training and conference rooms) incorporate electronic multimedia support and a learning environment based on the powerful integration of art, color, music, and visuals.
4. People have available to them computer-assisted learning programs and electronic job aids (e.g. just-in-time and flowcharting software).
5. We use groupware technology to manage group processes (e.g., project management, team processes, meeting management).

6. We support just-in-time learning with a system that integrates high-technology learning systems, coaching, and actual work on the job into a single, seamless process.
7. Our electronic performance support systems (EPSS) enable us to learn and do our work better.
8. We design and tailor our electronic performance support systems to meet our learning needs.
9. People have full access to the data they need to do their jobs effectively.
10. We can adapt software systems to collect, code, store, create, and transfer information in ways best suited to meet our needs.

Appendix B
Dimensions of the Learning Organization Questionnaire
(Watkins & Marsick, 1993)

Individual level

1. In my organization, people openly discuss mistakes in order to learn from them.
2. In my organization, people identify skills they need for future work tasks.
3. In my organization, people help each other learn.
4. In my organization, people can get money and other resources to support their learning.
5. In my organization, people are given time to support learning.
6. In my organization, people view problems in their work as an opportunity to learn.
7. In my organization, people are rewarded for learning.
8. In my organization, people give open and honest feedback to each other.
9. In my organization, people listen to others' views before speaking.
10. In my organization, people are encouraged to ask "why" regardless of rank.
11. In my organization, whenever people state their view, they also ask what others think.
12. In my organization, people treat each other with respect.
13. In my organization, people spend time building trust with each other.

Team or group level

14. In my organization, teams/groups have the freedom to adapt their goals as needed.
15. In my organization, teams/groups treat members as equals, regardless of rank, culture, or other differences.
16. In my organization, teams/groups focus both on the group's task and on how well the group is working.
17. In my organization, teams/groups revise their thinking as a result of group discussions or information collected.
18. In my organization, teams/groups are rewarded for their achievements as a team/group.
19. In my organization, teams/groups are confident that the organization will act on their recommendations.

Organization level

20. My organization uses two-way communication on a regular basis, such as suggestion systems, electronic bulletin boards, or town hall/open meetings.
21. My organization enables people to get needed information at any time quickly and easily.
22. My organization maintains an up-to-date database of employee skills.
23. My organization creates systems to measure gaps between current and expected performance.
24. My organization makes its lessons learned available to all employees.
25. My organization measures the results of the time and resources spent on training.
26. My organization recognizes people for taking initiative.
27. My organization gives people choices in their work assignments.
28. My organization invites people to contribute to the organization's vision.

29. My organization gives people control over the resources they need to accomplish their work.
30. My organization supports employees who take calculated risks.
31. My organization builds alignment of visions across different levels and work groups.
32. My organization helps employees balance work and family.
33. My organization encourages people to think from a global perspective.
34. My organization encourages everyone to bring the customers' views into the decision making process.
35. My organization considers the impact of decisions on employee morale.
36. My organization works together with the outside community to meet mutual needs.
37. My organization encourages people to get answers from across the organization when solving problems.
38. In my organization, leaders generally support requests for learning opportunities and training.
39. In my organization, leaders share up-to-date information with employees about competitors, industry trends, and organizational directions.
40. In my organization, leaders empower others to help carry out the organization's vision.
41. In my organization, leaders mentor and coach those they lead.
42. In my organization, leaders continually look for opportunities to learn.
43. In my organization, leaders ensure that the organization's actions are consistent with its values.

Measuring Learning Organization Results at the Organizational Level

44. In my organization, return on investment is greater than last year.
45. In my organization, average productivity per employee is greater than last year.
46. In my organization, time to market for products and services is less than last year.
47. In my organization, response time for customer complaints is better than last year.
48. In my organization, market share is greater than last year.
49. In my organization, the cost per business transaction is less than last year.
50. In my organization, customer satisfaction is greater than last year.
51. In my organization, the number of suggestions implemented is greater than last year.
52. In my organization, the number of new products or services is greater than last year.
53. In my organization, the percentage of skilled workers compared to the total workforce is greater than last year.
54. In my organization, the percentage of total spending devoted to technology and information processing is greater than last year.
55. In my organization, the number of individuals learning new skills is greater than last year.

Appendix C
Army Learning Organization Questionnaire
(Stothard, 2014)

Create continuous learning opportunities

1. We openly discuss mistakes in order to learn from them.
2. We identify skills they need for future work tasks.
3. We help each other learn.
4. We can get money and other resources to support our learning.
5. We are given time to learn.
6. We view problems in our work as an opportunity to learn.
7. We are rewarded for learning.

Promote inquiry and dialogue

8. We give open and honest feedback to each other.
9. We listen to others' views before speaking.
10. We are encouraged to ask 'why' regardless of rank.
11. Whenever we state our views, we also ask what others think.
12. We treat each other with respect.
13. We spend time building trust with each other.

Encourage collaboration and team learning

14. Workgroups/Sections have the freedom to change their goals as needed.
15. Workgroups/Sections treat members as equals regardless of rank, culture, or any other differences.
16. Workgroups/Sections focus both on the group's task and on how well the group is working.
17. Workgroups/Sections change their thinking as a result of group discussions.
18. Workgroups/Sections are rewarded for their achievements as a team or group.
19. Workgroups/Sections are confident that the Army will act on their suggestions.

Establish systems to capture and share learning

20. Army uses two-way communications regularly (e.g. such as suggestion systems, open meetings).
21. Army lets us get the information required to do our jobs quickly and easily.
22. Army maintains an up-to-date profile of our qualifications.
23. Army measures gaps between current and expected performance.
24. Army makes its lessons learnt available to all its people.
25. Army seeks feedback from its people on the effectiveness of training courses.

Empower people to a collective vision

26. Army recognizes its people for taking initiative.
27. Army gives people choices in their work assignments.
28. Army asks people to contribute to its vision.
29. Army gives people control over the resources they need to accomplish their work.
30. Army supports people with innovative work practices.
31. Army allows all ranks and groups to have a say in Army's vision.

Connect the organization to its environment

32. Army helps its people balance work and family.
33. Army encourages its people to think from a global perspective.
34. Army encourages its people to think about Army's image when making decisions.
35. Army considers the impact of decisions on morale.
36. Army works with communities to meet both Army's and communities' needs.
37. Army encourages its people to seek advice from different parts of Army when solving problems.
38. Army allows its people to informally discuss problems and seek advice outside their unit.*

Provide strategic leadership for learning

39. Supervisors generally support requests for learning opportunities and training.
40. Supervisors share information quickly and easily.
41. Supervisors empower their subordinates to help carry out Army's vision.
42. Supervisors mentor and coach those they lead.
43. Supervisors continually look for opportunities to learn.
44. Supervisors ensure that all actions are consistent with Army's values.

Leadership commitment and empowerment

45. Senior leaders resist change and are afraid of new ideas.
46. Senior leaders share a common vision with each other of what our work should accomplish.
47. We are given opportunities to provide feedback to our superiors.
48. Supervisors often provide useful feedback that helps to identify potential problems and opportunities.
49. Supervisors frequently involve subordinates in important decisions.

Experimentation and rewards

50. Supervisors encourage team members to experiment in order to improve work processes.
51. Innovative ideas are often rewarded by supervisors.
52. New ideas from subordinates are not treated seriously by supervisors.

53. I often bring new ideas to my Workgroup/Section.
54. People who are new are encouraged to question the way things are done.

Transfer of knowledge

55. I often have an opportunity to talk to other about why tasks either succeeded or failed.
56. Failures are discussed constructively.
57. New work processes that may be useful across Army are shared with all appropriate workers.
58. We have a system that allows us to learn successful practices from other organizations.

Teamwork and group problem solving

59. We often approach our supervisors for guidance with a problem.
60. We can usually form informal groups to solve problems.
61. Most problem-solving features people from a variety of groups.

*Army-specific item
Items 1–44 were modified from the DLOQ (Watkins & Marsick, 1993). Items 45–61 were sourced from the OLS (Goh & Richards, 1997).

Appendix D
Diagnostic Tool
(Garvin, Edmondson, & Gino, 2008)

Building Block 1: Supportive Learning Environment

Psychological Safety
In this unit, it is easy to speak up about what is on your mind.
If you make a mistake in this unit, it is often held against you.*
People in this unit are usually comfortable talking about problems and disagreements.
People in this unit are eager to share information about what does and doesn't work.
Keeping your cards close to your vest is the best way to get ahead in this unit.*

Appreciation of Differences
Differences in opinion are welcome in this unit.
Unless an opinion is consistent with what most people in this unit believe, it won't be valued.*
This unit tends to handle differences of opinion privately or off-line, rather than addressing them directly with the group.*
In this unit, people are open to alternative ways of getting work done.

Openness to New Ideas
In this unit, people value new ideas.
Unless an idea has been around for a long time, no one in this unit wants to hear it.*
In this unit, people are interested in better ways of doing things.
In this unit, people often resist untried approaches.*

Time for Reflection
People in this unit are overly stressed.*
Despite the workload, people in this unit find time to review how the work is going.
In this unit, schedule pressure gets in the way of doing a good job.*
In this unit, people are too busy to invest time in improvement.*
There is simply no time for reflection in this unit.*

Building Block 2: Concrete Learning Processes and Practices

Experimentation
This unit experiments frequently with new ways of working.
This unit experiments frequently with new product or service offerings.
This unit has a formal process for conducting and evaluating experiments or new ideas.
This unit frequently employs prototypes or simulations when trying out new ideas.

Information Collection
This unit systematically collects information on:
- competitors
- customers

- economic and social trends
- technological trends

This unit frequently compares its performance with that of:
- competitors
- best-in-class organizations

Analysis
This unit engages in productive conflict and debate during discussions.
This unit seeks out dissenting views during discussions.
This unit never revisits well-established perspectives during discussions.*
This unit frequently identifies and discusses underlying assumptions that might affect key decisions.
This unit never pays attention to different views during discussions.*

Education and Training
Newly hired employees in this unit receive adequate training.
Experienced employees in this unit receive
- periodic training and training updates
- training when switching to a new position
- training when new initiatives are launched

In this unit, training is valued.
In this unit, time is made available for education and training activities.

Information Transfer
This unit has forums for meeting with and learning from:
- experts from other departments, teams, or divisions
- experts from outside the organization
- customers and clients
- suppliers

This unit regularly shares information with networks of experts within the organization.
This unit regularly shares information with networks of experts outside the organization.
This unit quickly and accurately communicates new knowledge to key decision makers.
This unit regularly conducts postaudits and after-action reviews.

Building Block 3: Leadership That Reinforces Learning

My managers invite input from others in discussions.
My managers acknowledge their own limitations with respect to knowledge, information, or expertise.
My managers ask probing questions.
My managers listen attentively.
My managers encourage multiple points of view.
My managers provide time, resources, and venues for identifying problems and organizational challenges.

My managers provide time, resources, and venues for reflecting and improving on past performance.
My managers criticize views different from their own.*